

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS (Tentative)
MATH 490 *Differential Equations II*

Objectives Discuss additional topics in differential equations beyond the scope of differential equations I

Intended Audience Majors in Mathematical or Physical Sciences and students in the Dual-Degree Engineering Program.

Prerequisite MATH 311

Text *Fundamentals of Differential Equations*, by R. Kent Nagle, Edward B. Staff, Arthur David Snider; Addison-Wesley, 8th Edition, 2012.

Topics (not necessarily in this order)	Approximate No. of Class Hours
Review of Differential Equations (Chapter 1-6) Review of prerequisite DE techniques including solving first order ODEs, linear ODEs with constant coefficients, and higher order linear DEs	3
Series Solutions Taylor Series Approximations, Power series solutions, Method of Frobenius, etc.	12
Systems of Equations Matrices and vectors, Eigenvalues and eigenvectors, homogeneous linear systems	14
Laplace Transforms Definitions and properties, inverse Laplace transforms, solving using Laplace transforms, convolution of Laplace transforms.	11
Partial Differential Equations Using Fourier sine and cosine series to solve standard boundary value problems for the heat equation, wave equation, and Laplace equation.	12
Testing and Review	4
	56

EVALUATION

Homework, Lab work, quizzes: 20-40%

In-class examinations: 40-60%

Comprehensive Final Exam: 20-40%

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.